

REMARKS

I. Claim Rejections based on Mazess and Frank

Claims 1, 2, 6-9, 11, 13-17, and 46 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,841,833 (Mazess) in view of U.S. Patent No. 6,445,765 (Frank).

Claims 1 and 9

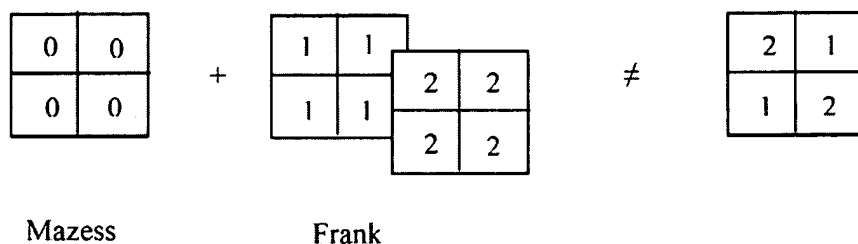
Claim 1 recites that the first and second scintillating materials for respective first and second imaging elements of *a detector assembly* have *different compositions* (Emphasis Added). Claim 9 recites that the first and second materials for respective first and second conversion elements of *a conversion panel* have *different compositions* (Emphasis Added). Mazess and Frank do not disclose or suggest such limitations. Rather, Mazess discloses high energy detector 37(a) and low energy detector 37(b) that are made from respective separate materials 308, 312 having the *same* composition. Also, Applicant respectfully disagrees with the Office Action's characterization on page 5 of the Office Action that column 27, lines 23-45 of Mazess allegedly implies different materials (i.e., that are used to form different imaging elements in a same detector/panel). There is nothing in this cited passage of Mazess that discloses or suggests that different imaging elements in a same detector assembly, or in a same panel, have different materials with different compositions. Instead, in Mazess, the difference in energy detectors 37(a), 37(b) is achieved by varying the thickness of the material that is used to form the detectors (as indicated by the same type of shading in figures 22, 23), and not by using different materials with different compositions.

Frank also does not disclose or suggest the above limitations, and therefore fails to make up the deficiencies present in Mazess. Since both Mazess and Frank fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of the above claims.

According to page 2 of the Office Action, the Examiner has read Applicant's argument regarding Frank as failing to show two different materials. Applicant believes that this is a mischaracterization of Applicant's argument. The argument against Frank made in the last response was that it actually fails to show different imaging elements of a same detector assembly/panel be made from different materials with different compositions. In particular, Frank discloses that *two* separate detector assemblies (i.e., not "a" same detector assembly, as

recited in claim 1) can have different respective chemical compositions (column 1, lines 10-24), but does not disclose or suggest that different imaging elements in a detector assembly (e.g., either one of the two detector assemblies) be made from different materials.

Since Mazess discloses that different imaging elements in a same detector assembly are made from a same material (see diagram below with “0” representing the material in the device of Mazess), and Frank discloses that two separate detector assemblies can have different respective materials (see diagram below with “1” representing first material, and “2” representing second material in the device of Frank), their combination clearly does not, and cannot, result in a detector assembly/panel having different imaging elements formed from different materials with different compositions (see diagram below). Thus, the combined teachings of Mazess and Frank could not have suggested to those of ordinary skill in the art of the subject matter of claims 1 and 9.



For at least the foregoing reasons, claims 1 and 9, and their respective dependent claims, are believed allowable over the cited references.

Claim 17

Claim 17 recites an access circuit coupled to the photo detector array and configured to collect signals from two or more of the lines of the detector elements *simultaneously* (Emphasis Added). According to the Office Action, column 2, lines 47-57 of Mazess allegedly disclose the above limitation. However, there is nothing in this passage of Mazess that discloses or suggests an access circuit configured to collect signals from two or more lines of detector elements *simultaneously*. For this additional reason, claim 17 is believed allowable.

According to page 4 of the Office Action, the claimed access circuit is allegedly inherent in the system cited in Mazess because it discloses real images, and therefore the claimed access

circuit is needed for simultaneous processing of image data. As an initial matter, Applicant respectfully note that there is nothing in Mazess (or in Frank for that matter) that discloses or suggests “real” images. Also, Applicant submit that real images have been known to be generated by serially reading out image data row-by-row at a fast read-out rate. Thus, any alleged disclosure of a “real” image (which is lacking in Mazess and Frank) does not necessitate a finding that an access circuit for collecting signals simultaneously from two or more lines of detector elements is disclosed. For these additional reasons, claim 17 is believed allowable over the cited references.

II. Claim Rejections based on Bogatu and Barnes

Claims 4, 5, 18-23, 25-28, 41, 45, and 47-55 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2002/0191751 (Bogatu) in view of U.S. Patent No. 5,138,167 (Barnes).

Claims 18, 41, and 52

Claim 18 recites that the plurality of *first photoconductor elements* and the plurality of *second photoconductor elements form a surface* (Emphasis Added). Claim 41 recites that the plurality of *first imaging elements* and the plurality of *second imaging elements form a surface* (Emphasis Added). Claim 52 recites a plurality of first imaging elements made from a first photoconductor that has a first radiation detection characteristic, and a plurality of second imaging elements made from a second photoconductor that has a second radiation detection characteristic, wherein *one of the plurality of first imaging elements and one of the plurality of second imaging elements are arranged side-by-side* (Emphasis Added). Applicant agrees with the Examiner that Bogatu does not disclose an imaging layer having different imaging elements.

According to page 9 of the Office Action, Barnes allegedly discloses different semiconductor materials, and therefore, it would have been allegedly obvious to modify Bogatu to include different semiconductors as that taught by Barnes to improve detection accuracy and sensitivity. However, Applicant respectfully notes that Barnes specifically teaches providing two layers of detector elements (i.e., to form a “front and rear” configuration - see column 11, line 52, and figure 2) so that low energy is absorbed by the first layer, and high energy is transmitted through the first layer and absorbed by the second layer (column 4, line 67 to column 5, line 4). Thus, regarding the test for obviousness, the combined teachings of Bogatu and

Barnes clearly do not disclose or suggest selecting a material from the first layer 26 of Barnes, selecting a material from another layer 28 of Barnes, and placing them on the same layer 22' of Bogatu.

Also, according to page 3 of the Office Action, Bogatu allegedly discloses enhancing the contrast and spatial resolution of an image, and one skilled in the art allegedly knows that it is well known that a dual energy side-by-side detector reduces the possibility of motion artifacts and of edge artifacts, which will also enhance the contrast and spatial resolution of the image. Applicant respectfully disagrees. Applicant submits that Bogatu's disclosure of enhancing contrast and spatial resolution of an image cannot be the motivation to use "a dual energy side-by-side detector." This is because placing different energy detectors in a side-by-side configuration would actually result in only parts of the detector being used for imaging for a given imaging energy (i.e., not all of the imaging elements can be used because they react to different imaging energies). Thus, Bogatu's disclosure of enhancing contrast and spatial resolution of an image actually discourages one skilled in the art in placing imaging elements with different imaging characteristics in a side-by-side configuration.

For at least the foregoing reasons, Applicant respectfully requests that the § 103 rejection be withdrawn.

Claim 22

Claim 22 (together with base claim 21) recites that the first *photoconductor elements* are configured for generating charges in response to radiation at a first energy level, and the second *photoconductor elements* are configured for generating charges in response to radiation at a second energy level, wherein the first energy level is below a k-edge of a contrast agent, and the second energy level is above a k-edge of a contrast agent (Emphasis Added).

According to pages 3 and 9 of the Office Action, paragraphs 12 and 44 of Bogatu allegedly shows that the "filters" are above and below a k-edge energy level. However, the "filters" described in paragraph 12 of Bogatu are not photoconductor elements that generate charges in response to radiation. Also, paragraph 44 of Bogatu discloses a filter set with filters 32, 34, which also are not photoconductor elements that generate charges in response to radiation. There is nothing in paragraph 12 or 44 of Bogatu that discloses or suggests that the filters 32, 34 are respective first and second *photoconductor elements* for generating charges in response to radiation at respective above and below a K-edge energy level. To the extent that the

Examiner disagrees, and is inclined to maintain the claim rejection, Applicant respectfully requests that the Examiner points out where Bogatu discloses that the filters 32, 34 themselves are configured for generating charges in response to radiation.

Barnes also does not disclose or suggest the above limitations and therefore fails to make up the deficiency present in Bogatu. Since both Bogatu and Barnes fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of claim 12.

For at least the foregoing reasons, claim 12 is believed allowable over Bogatu, Barnes, and their combination.

Claims 23 and 42

Claim 23 recites that the plurality of the first and the second *photoconductor elements* are arranged relative to each other in a checkerboard pattern (Emphasis Added). Claim 42 recites similar limitations. According to page 9 of the Office Action, paragraph 46 of Bogatu allegedly discloses the above limitations. Paragraph 46 of Bogatu discloses a detector array 22' with detector elements 76. However, there is nothing in paragraph 46 of Bogatu that discloses that the detector elements 76 are different *photoconductor elements* that are arranged in a *checkerboard pattern*. Instead, the only checkerboard pattern disclosed in Bogatu is that associated with a filter set 74 having filters 32, 34 (see figure 8B), not the set of detector elements 76. Note that the filter set 74 of Bogatu is not the same as the detector array 22' (see figure 8A), and therefore does not have photoconductor elements, nor does the filter set 74 has photoconductor elements arranged in a checkerboard pattern. For these additionally reasons, claims 23 and 42 are believed allowable over the cited references.

III. Claim Rejections based on Bogatu and Maekawa

Claims 29, 31, 32, 34, 35, 37, 38, and 40 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2002/0191751 (Bogatu) in view of EP 1016881 (Maekawa).

Claim 29

Claim 29 recites a *photoconductor layer for generating electron-hole-pairs in response to radiation*, the photoconductor layer aligned with the first and the second filters (Emphasis Added). Bogatu does not disclose or suggest such photoconductor layer. Rather, Bogatu discloses a detector array 22' having detector elements 76 for producing electrical signal in

response to radiation (figures 8a-8c). There is nothing in Bogatu that discloses or suggests that the detector array 22' is a photoconductor layer for generating electron-hole-pairs in response to radiation. Maekawa also does not disclose or suggest the above limitations, and therefore cannot be combined with Bogatu to form the subject matter of claim 29. For at least the foregoing reason, claim 29 and its dependent claims are believed allowable over Bogatu, Maekawa, and their combination.

According to page 3 of the Office Action, Bogatu inherently discloses a photoconductor layer for generating electron-hole-pairs because such feature is allegedly inherent in semiconductors. Applicant respectfully traverses. Photoconductor is a specific type of imaging material, and generating electron-hole pairs using photoconductor is a specific imaging technique. Thus, a mere disclosure of a "semiconductor" does not, and cannot, form the basis of the allegation that Bogatu suggests a photoconductor layer for generating electron-hole-pairs. For these additional reasons, claim 29 and its dependent claims should be allowable over the cited references and their combination.

Claim 35

Claim 35 recites a *conversion layer for generating photons in response to radiation*, the conversion layer aligned with the first and the second filters (Emphasis Added). According to the Office Action, figures 8a-8c of Bogatu allegedly disclose a conversion layer. However, figures 8a-8c of Bogatu actually discloses a detector array 22' having detector elements 76 for producing electrical signal in response to radiation. There is nothing in Bogatu that discloses or suggests that the detector array 22' in the embodiment of figures 8a-8c is a conversion layer for generating photons in response to radiation.

Also according to pages 3-4 of the Office Action, paragraph 32 of Bogatu allegedly discloses that the detector may include scintillators. Applicant respectfully notes that paragraph 32 of Bogatu describes the embodiment of figure 2 (which is different from the embodiment of figures 8a-8c) in which the system does not include any filters. Thus, Bogatu does not disclose or suggest the combination of (1) a conversion layer and (2) filters that are aligned with the conversion layer (In addition to the elements themselves, cited reference must disclose that the elements are arranged in the same manner as that described in the claim).

Claim 35 also recites that the first and second filters are *physically coupled* to the conversion layer (Emphasis Added). According to page 11 of the Office Action, Bogatu

allegedly discloses such limitation. However, in Bogatu, the filter layer 74 is not physically coupled to the detector layer 22' (see figure 8A).

For at least the foregoing reason, claim 35 and its dependent claims are believed allowable over Bogatu, Maekawa, and their combination.

IV. Claim Rejections based on Mazess and Bogatu

Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Mazess in view of Bogatu.

Claim 12 (together with base claim 11) recites that the first *conversion elements* are configured for generating light photons in response to radiation at a first energy level, and the second *conversion elements* are configured for generating light photons in response to radiation at a second energy level, wherein the first energy level is below a k-edge of a contrast agent, and the second energy level is above a k-edge of a contrast agent (Emphasis Added). Applicant agrees with the Examiner that Mazess does not disclose or suggest the above limitations.

According to pages 3 and 8 of the Office Action, paragraphs 12 and 13 of Bogatu allegedly show that the “filters” are above and below a k-edge energy level. However, the “filters” described in paragraphs 12 and 13 of Bogatu are not conversion elements that generate light photons in response to radiation, as described in claim 12. There is nothing in paragraph 12 or 13 of Bogatu that discloses or suggests that the filters in Bogatu are first and second *conversion elements* for generating light photons in response to radiation at respective above and below a K-edge energy level. To the extent that the Examiner disagrees, and is inclined to maintain the claim rejection, Applicant respectfully requests that the Examiner points out where Bogatu discloses that the “filters” themselves are configured for generating light photons in response to radiation.

Since both Mazess and Bogatu fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of claim 12. For at least the foregoing reason, claim 12 is believed allowable over Mazess, Bogatu, and their combination.

CONCLUSION

Based on the foregoing, all claims are believed in condition for allowance. If the Examiner has any questions or comments regarding this amendment, please contact the undersigned at the number listed below.

Applicant(s) hereby explicitly retracts and rescinds any and all of the arguments and disclaimers presented to distinguish the prior art of record during the prosecution of all parent and related application(s)/patent(s), and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-036-US**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-036-US**.

Respectfully submitted,

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